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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/416,081	10/12/99	FISHMAN	I 99-01-US

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WM01/0731

EXAMINER

SEDIGHIAN, R

ART UNIT

PAPER NUMBER

2633

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/416,081

Applicant(s)

FISHMAN ET AL.

Examiner

Mohammad R Sedighian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 1999.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-4, 6-17 and 22-34 is/are rejected.
- 7) ☐ Claim(s) 5, 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. The drawings are objected because suitable legend should be provided for the structural elements of figs. 1, 2, 3, and 5.

Correction is required.

2. Claim 14 is objected because of the following informality:

- a) The word "channel for for transmission", in line 14 of the claim, should change to
--- channel for transmission ---.

Correction is required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 4, 6-7, 15, 17, and 28 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 4, and 15, it is not clear what is meant by the limitation "...said broadband optical source has a discrete spectrum with equally spaced individual spectral lines, a spectral spacing between said spectral lines exceeding an electrical detection bandwidth of transmitted CDM optical signals".

As to claim 28, it is not clear what is meant by the limitation "...said broadband optical source has a discrete spectrum with equally spaced individual spectral lines, spectral spacing between said spectral lines exceeding an electrical detection bandwidth of transmitted CDM

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optical signals and defining a maximum number of CDM transmission channels for transmitting the optical signals“.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 22, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467).

Regarding claims 1, 22, and 32-34, Kitajima discloses a multichannel optical communication system for transmitting optical signals via an optical fiber (col. 1, lines 1-12 and 5, fig. 1), comprising: a plurality of individual WDM transmission channels (col. 4, lines 52-55 and 101, 102, 103, fig. 1) each transmitting a WDM optical signal on a unique wavelength within a designated bandwidth (col. 4, lines 54-56, 58-59, col. 8, lines 21-25, col. 13, lines 1-6, 43-49 and fig. 8c); a CDM transmission unit (col. 1, lines 13-15 and 104, fig. 1) that is comprised of a transmission channel (col. 4, lines 58-59 and 104, fig. 1). Kitajima differs from the claimed invention in that Kitajima does not specifically disclose the CDM transmission unit is disposed within at least one individual WDM transmission channel (101, fig. 1), and Kitajima does not specifically disclose the CDM transmission unit transmits CDM optical signals within the designated bandwidth of one individual WDM transmission channel. As to a CDM transmission unit that is disposed within at least one individual WDM transmission channel, Kitajima discloses a coherent optical frequency division multiplex communication system (col. 1, lines

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13-15) that is comprised of a plurality of optical transmitters connected to different channels for transmitting different signals (col. 4, lines 49-60). Kitajima further discloses a channel spacing stabilizer (20, fig. 1) that can be used to stabilize the optical frequencies of the respective channels with equal spacing there-between (col. 4, lines 62-64). Therefore, it would have been obvious to an artisan at the time of invention to incorporate a CDM transmission unit within one individual WDM transmission channel by a system and method such as the one of Kitajima in order to provide a high density multiplex transmission system for exchanging large capacity of information. As to claims 33-34, Kitajima discloses a coherent optical frequency division multiplex communication system for transmitting optical signals therethrough within a designated range of wavelengths of each transmission channel (col. 1, lines 13-15, col. 4, lines 49-59).

7. Claim 2, 4, 6-7, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Brown et al. (US patent No: 5,663,639).

Regarding claim 2, Kitajima differs from the claimed invention in that Kitajima does not disclose a single frequency optical source for each WDM transmission channels and a broadband optical source for generating light for CDM optical signals. Brown discloses an apparatus and method for generating coherent radiation (col. 1, lines 10-20, col. 2, lines 41-49) using a single frequency optical source, or a broadband optical source (see abstract, col. 8, lines 62-67, col. 9, lines 1-10). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate single frequency optical source, or a broadband optical source such as the ones used in the optical transmission system of Brown for the light sources in the

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optical communication system of Kitajima in order to output a high frequency, high power, continuous-wave signal light.

Regarding claim 4, as it is understood, the combination of Kitajima and Brown further differs from the claimed invention in that Kitajima and Brown do not specifically disclose the optical source has a discrete spectrum with equally spaced individual spectral lines. Kitajima discloses a channel spacing stabilizer (20, fig. 1) that can be used to stabilize the optical frequencies of the respective channels with equal spacing therebetween (col. 4, lines 62-64). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical transmission system with a channel spacing stabilizer such as the one of Kitajima to provide communication channels such that the corresponding frequencies within each channel are equally spaced to further increase the spectral width of the optical signals.

Regarding claim 6, as it is understood, Kitajima discloses the optical source is a laser modulated at frequency f_0 (col. 4, lines 53-57 and 1, 2, 3, 20, fig. 1).

Regarding claim 7, as it is understood, Kitajima discloses the optical source is a plurality of lasers (3, 102, 103, fig. 1) each tuned and fixed at respective wavelength (col. 4, lines 62-64 and 20, fig. 1).

Regarding claim 29, Kitajima discloses a multichannel optical communication system for transmitting optical signal as discussed above in claim 1. Kitajima further discloses a receiver for carrying optical signals via the WDM transmission channels (col. 4, lines 65-68, col. 5, lines 1-6 and 30, 13, 14, fig. 1). Kitajima differs from the claimed invention in that Kitajima does not disclose generating a light beam by a broadband optical source for transmitting CDM optical signals. Brown discloses a broadband optical source (see abstract, col. 8, lines 62-67, col. 9, lines

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1-10) as discussed above in claim 2. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a broadband optical source such as the ones used in the optical transmission system of Brown for the light sources in the optical transmission system of Kitajima in order to output a high frequency, high power, continuous-wave signal light. Claim 29 further requires similar limitations as discussed above in claim 1.

Regarding claim 30, Kitajima further discloses extracting the plurality of CDM transmission channels for detecting the optical signals (col. 4, lines 65-68, col. 5, lines 1-5).

Regarding claim 31, Kitajima further discloses a spectrum of the light beam has a spectral range within a transparency range of the optical fiber (col. 4, lines 58-61).

8. Claims 23 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Burns et al. (US patent No: 5,917,970).

Regarding claims 23 and 27, Kitajima further discloses a WDM, or CDM multiplexer (4, fig. 1), an optical fiber link (5, fig. 1), an optical demultiplexer (7, fig. 1), and an optical receiver (8, fig. 1). Kitajima differs from the claimed invention in that Kitajima does not specifically disclose generating light beams by a single frequency optical source for transmitting WDM optical signals, and by a broadband optical source for transmitting CDM optical signals, and modulating and phase delaying the CDM optical signals. Burns discloses an optical wavelength multiplex transmission system (col. 1, lines 39-45), wherein N separate highly coherent laser sources provide N highly coherent optical channels of different wavelengths (col. 2, lines 15-30), and the optical signals of different channels are further phase modulated and delayed (col. 1, lines 40-67, col. 2, lines 30-67, col. 3, lines 35-67, col. 4, lines 1-2). Therefore, it would have

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been obvious to a person of ordinary skill in the art at the time of invention to incorporate highly coherent laser sources, and a method of coherent wavelength multiplexing and phase modulation such as the one of Burns for the coherent optical multiplex transmission system of Kitajima to phase modulate and delaying the optical signals by passing through an associated optical delay lines of predetermined delay to further provide a plurality of phase adjusted optical signals that are wavelength multiplexed to form a single phase adjusted optical signal containing a plurality of optical channels of different characteristics for further transmission over an optical fiber. As to claim 27, it further requires similar limitations as recited in claim 1 above.

As to claim 28, as it is under stood, the combination of Kitajima and Burns further differs from the claimed invention in that Kitajima and Burn do not specifically disclose the optical source has a discrete spectrum with equally spaced individual spectral lines. Kitajima discloses a channel spacing stabilizer (20, fig. 1) that can be used to stabilize the optical frequencies of the respective channels with equal spacing therebetween (col. 4, lines 62-64). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical transmission system with a channel spacing stabilizer such as the one of Kitajima to provide communication channels such that the corresponding frequencies within each channel are equally spaced to further increase the spectral width of the optical signals.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Brown et al. (US patent No: 5,663,639) and in further view of Takara, H. Kawanishi et al. (Electronics Letters 7th July 1994 vol. 30 No.14).

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Regarding claim 3, the combination of Kitajima and Brown further differs from the claimed invention in that Kitajima and Brown do not disclose the broadband optical source comprises of a seed source, an optical filter, an erbium-doped fiber amplifier, and a semiconductor optical amplifier. Takara, H. Kawanishi discloses a signal source that is comprised of a laser source (ML-EDF, fig. 1), an optical filter (BPF, fig. 1), a first erbium-doped fiber amplifier (EDFA4, fig. 1), and a second erbium-doped fiber amplifier (EDFA5, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical filter and erbium-doped fiber amplifiers such as the one used in the signal source of Kawanishi in the optical source in the modified optical transmission system of Kitajima and Brown in order to provide a desired selection for the spectral range of the light transmitter and to further provide an amplification of the signal light for further signal transmission and processing.

10. Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Brown et al. (US patent No: 5,663,639) and in further view of Burns et al. (US patent No: 5,917,970).

Regarding claim 8, the combination of Kitajima and Brown further differs from the claimed invention in that Kitajima and Brown do not disclose the CDM transmission unit further comprises of a light splitter, a phase modulator, a reference path, a reference arm, and a combiner. Burns discloses an optical wavelength multiplex transmission system (col. 1, lines 39-45), wherein N separate highly coherent laser sources provide N highly coherent optical channels of different wavelengths (col. 2, lines 15-30), and the optical signals of different channels are

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split (16, fig. 1) and passed through a reference path (22a, 22b, fig. 1) and a reference arm (28, 32, 34, 36, figs. 1, 2a), and further phase modulated (36, figs. 1, 2a), delayed (48, fig. 1), and combined (col. 1, lines 40-67, col. 2, lines 30-67, col. 3, lines 35-67, col. 4, lines 1-2 and 53, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a method of coherent wavelength division multiplexing and phase modulation such as the one of Burns for the modified coherent optical transmission system of Kitajima and Brown to phase modulate and delaying the optical signals by passing through an associated optical delay lines of predetermined delay to further provide a plurality of phase adjusted optical signals that are wavelength multiplexed to form a single phase adjusted optical signal containing a plurality of optical channels of different characteristics for further transmission over an optical fiber.

11. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Brown et al. (US patent No: 5,663,639) and in further view of Watanabe (US patent No: 5,896,211).

Regarding claim 12, Kitajima further discloses a WDM multiplexer (4, fig. 1), one optical fiber link (5, fig. 1), a WDM demultiplexer (7, fig. 1), and an optical receiver (8, fig. 1). The combination of Kitajima and Brown further differs from the claimed invention in that Kitajima and Brown do not specifically disclose a plurality of WDM receivers, and one or more CDM receivers. Watanabe, from the same field of endeavor, discloses an optical communication system that is comprised of transmitters for coherent transmission of four channels (col. 1, lines 10-15, 59-65, col. 3, lines 20-40 and 1-1, 1-2, 1-3, fig. 1, and fig. 11), an optical multiplexer (2, fig. 1 and SCM, fig. 11), an optical fiber link (3, fig. 1 and 34, fig. 11), an optical demultiplexer

(fig. 11 and 81, fig. 12), and a plurality of optical receivers (fig. 11 and 83-1, 83-2, 83-3, fig. 12).

It is well recognized that a similar receiving system must be provided at the receiving side in order to properly recover the signal or information from the multiplexer or transmitter side. Therefore, it would have been obvious to an artisan at the time of invention to incorporate a plurality of WDM optical receivers, or one or more CDM receivers such as the ones in the optical communication system of Watanabe for the optical reception system in the modified optical system of Kitajima and Brown in order to receive the optical signals having the same transmitted characteristics and properly recover the transmitted signals or information.

Regarding claim 13, Watanabe further discloses the receiving system comprises of a splitter (fig. 11 and 81, fig. 12), one or more optical filters (36-1, 36-2, fig. 11 and 82-1, 82-2, fig. 12), and one or more optical detectors (fig. 11 and 83-1, 83-2, fig. 12).

12. Claims 14-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Burns et al. (US patent No: 5,917,970) and in further view of Singh et al. (US patent No: 6,185,345).

Regarding claim 14, Kitajima discloses a plurality of individual WDM transmission channels (101, 102, fig. 1) for transmitting optical signals on a unique wavelength (col. 4, lines 52-59), and at least one WDM transmission channel for transmitting a plurality of CDM optical signals (col. 1, lines 13-15 and 103, 104, fig. 1). Kitajima differs from the claimed invention in that Kitajima does not specifically disclose generating light beams by a single frequency optical source for transmitting WDM optical signals, and by a broadband optical source for transmitting CDM optical signals, a light splitter for dividing the light generated by the broadband optical

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source, a phase modulator, and an optical delay line. Burns discloses an optical wavelength multiplex transmission system (col. 1, lines 39-45), wherein N separate highly coherent laser sources (14, fig. 1) provide N highly coherent optical channels of different wavelengths (col. 2, lines 15-30), and the optical signals of different channels are divided by an optical splitter (16, fig. 1) and further phase modulated (28, 32, 34, 36, fig. 1, 2a) and delayed (col. 1, lines 40-67, col. 2, lines 30-67, col. 3, lines 35-67, col. 4, lines 1-2 and 48, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate highly coherent laser sources, and a method of coherent wavelength multiplexing and phase modulation such as the one of Burns for the coherent optical multiplex transmission system of Kitajima to phase modulate and delaying the optical signals by passing through an associated optical delay lines of predetermined delay to further provide a plurality of phase adjusted optical signals that are wavelength multiplexed to form a single phase adjusted optical signal containing a plurality of optical channels of different characteristics for further transmission over an optical fiber. The combination of Kitajima and Burns further differs from the claimed invention in that Kitajima and Burns do not disclose the optical delay line comprises of a temperature sensitive component. Singh discloses a dense wavelength division multiplexer/demultiplexer that includes Mach-Zehnders interferometers for separating the lights (col. 3, lines 15-20 and fig. 3), wherein the interferometer (60, fig. 6) provides a general technique for overcoming signal drift by introducing a variable delay line (66, fig. 6) in one of the paths (74, fig. 6) of the interferometer, and the delay provided by the delay line can be controlled by sensing the environmental condition by using a control device (col. 7, lines 3-9 and 68, fig. 6). It is apparent that such a control device has the temperature sensitive components. Therefore, it would have been obvious

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to a person of ordinary skill in the art at the time of invention to incorporate an optical delay line with temperature sensitive component such as the one of Singh for the optical delay lines in the modified optical multiplex transmission system of Kitajima and Burns in order to compensate for variation in the phase by changing the temperature of the optical delay line to further provide a relative delay at a constant value and to maintain a fixed phase relationship in each line.

Regarding claim 15, as it is understood, the combination of Kitajima, Burns, and Singh further differs from the claimed invention in that Kitajima, Burns and Singh do not specifically disclose the optical source has a discrete spectrum with equally spaced individual spectral lines. Kitajima discloses a channel spacing stabilizer (20, fig. 1) that can be used to stabilize the optical frequencies of the respective channels with equal spacing therebetween (col. 4, lines 62-64). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical transmission system with a channel spacing stabilizer such as the one of Kitajima to provide communication channels such that the corresponding frequencies within each channel are equally spaced to further increase the spectral width of the optical signals.

Regarding claim 17, as it is understood, Burns discloses the CDM transmission unit comprises a common reference arm (col. 3, lines 35-47 and 22, fig. 1).

13. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Burns et al. (US patent No: 5,917,970) and in further view of Singh et al. (US patent No: 6,185,345).

Regarding claim 24, the combination of Kitajima and Burns further differs from the claimed invention in that delay line Kitajima and Burns do not disclose the optical comprises of a

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temperature sensitive component. Singh discloses temperature compensation device in a delay line, as discussed above in claim 14. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical delay line with temperature sensitive component such as the one of Singh for the optical delay lines in the modified optical multiplex transmission system of Kitajima and Burns in order to compensate for variation in the phase by changing the temperature of the optical delay line to further provide a relative delay at a constant value and to maintain a fixed phase relationship in each line.

Regarding claim 25, Kitajima further discloses extracting the plurality of CDM transmission channels for detecting the optical signals (col. 4, lines 65-68, col. 5, lines 1-5).

Regarding claim 26, Kitajima further discloses a spectrum of the light beam has a spectral range within a transparency range of the optical fiber (col. 4, lines 58-61).

14. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Brown et al. (US patent No: 5,663,639), and in view of Burns et al. (US patent No: 6,185,345), and in further view of Singh et al. (US patent No: 6,185,345).

Regarding claims 9-10, the combination of Kitajima, Brown, and Burns further differs from the claimed invention in that Kitajima, Brown, and Burns do not disclose the optical delay line comprises of a temperature sensitive component. Singh discloses temperature compensation device in a delay line, as discussed above in claims 14 and 24. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical delay line with temperature sensitive component such as the one of Singh for the optical delay

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lines in the modified optical multiplex transmission system of Kitajima, Brown and Burns in order to compensate for variation in the phase by changing the temperature of the optical delay line to further provide a relative delay at a constant value and to maintain a fixed phase relationship in each line.

Regarding claim 11, Burns further discloses the phase modulator and the reference arm are integrated on a single lithium niobate chip (col. 3, lines 42-51).

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitajima et al. (US patent No: 5,144,467) in view of Burns et al. (US patent No: 5,917,970), and in view of Singh et al. (US patent No: 6,185,345), and in further view of Takara, H. Kawanishi et al. (Electronics Letters 7th July 1994 vol. 30 No.14).

Regarding claim 16, the combination of Kitajima, Burns, and Singh further differs from the claimed invention in that Kitajima, Burns, and Singh do not disclose the broadband optical source comprises of a seed source, an optical filter, an erbium-doped fiber amplifier, and a semiconductor optical amplifier. Takara, H. Kawanishi discloses an signal source that is comprised of a laser source (ML-EDF, fig. 1), an optical filter (BPF, fig. 1), a first erbium-doped fiber amplifier (EDFA4, fig. 1), and a second erbium-doped fiber amplifier (EDFA5, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate an optical filter and erbium-doped fiber amplifiers such as the one used in the signal source of Kawanishi for the optical source in the modified optical transmission system of Kitajima, Burns, and Singh in order to provide a desired spectral range for the

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transmission of signal light and to further provide an optical amplification for further signal transmission and processing.

16. Claims 5 and 18-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad R Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.


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